Qualcomm Atheros, Inc.

HomePlug Green PHY Integrated Circuit Development

Abstract

Through this HomePlug Green Physical Layer (PHY) Integrated Circuit Development project ("HomePlug"), Atheros is developing a compliant power line communications (PLC) solution to support smart grid functionality in a wide range of equipment including: advanced metering infrastructure (AMI), smart meters, smart appliances, electric transportation, and home area network peripheral devices. The objectives of the project involve developing a PLC integrated circuit for use in AMI smart meters and customer systems that is fully interoperable with IEEE 1901 and HomePlug equipment, reducing the material and manufacturing costs of the circuit as well as reducing the device power consumption. With the development of this new device, Atheros is offering efficient and cost-effective home area networking connectivity options for meters and customer system providers, which reduces implementation costs for both power companies and customers.

At-A-Glance

Recipient: Qualcomm Atheros, Inc.

Company Headquarters: San Jose, California

Total Budget: $9,109,600

Federal Share: $4,554,800

Project Type: Customer Systems

Equipment

- **Integrated Circuit for Smart Meters and Customer Systems**

Key Targeted Benefits

- **Reduced Power Consumption**
- **Reduced Product Costs**

Smart Grid Features

Communications infrastructure includes a new integrated circuit to provide highly reliable communications for smart meters and other devices necessary to interface with customer systems via home area networks. Atheros is designing and manufacturing this circuit and equipment vendors are integrating this circuit into electric vehicles, energy management systems, and select meters. The device uses existing electrical wiring within the home to communicate data and commands from the smart meter to the customer system. In addition, the device integrates with all IP-based AMI backhaul and meter communications networks.

This new circuit provides an upgrade to existing Atheros chipsets, which are currently in wide use for smart grid devices. However, while the existing chipset requires three separate voltages including 1.05 VDC for core logic, 3.3VDC for the analog front end, and 12 VDC for the line driver, the new technology is being designed to be powered from a single 3.3 VDC buss, providing a simplification in design of the power supply and a reduction in cost. In addition, a new power save function under development reduces energy consumption by enabling all Home Plug Green PHY clients within a given network to use a low power "sleep" state in a coordinated manner, thereby facilitating reductions in power consumption during periods of low network traffic.

This new chipset uses the HomePlug Green PHY and IEEE 1901 data protocols for power line communications. This circuit is designed to provide communications for power lines at a frequency range of 2—30 MHz, which allows for communications within both home electrical wiring systems and utility distribution systems. This new chipset is designed for high levels of communications reliability, and supports data transfer at rates of 4—10 Mbps.

Qualcomm Atheros, Inc. *(continued)*

Timeline

Key Milestones	Target Dates
Equipment development completed	Q1 2012
Commercial product integration completed	Q3 2012
Manufacturing of equipment commences	Q4 2012

Contact Information

Jim Zyren
Director of Marketing
Qualcomm Atheros, Inc.
jzyren@qca.qualcomm.com

Recipient Team Project Websites:
www.atheros.com/corporate/content.php?nav1=119&news=28
www.atheros.com/media/product/product_71_file1.pdf